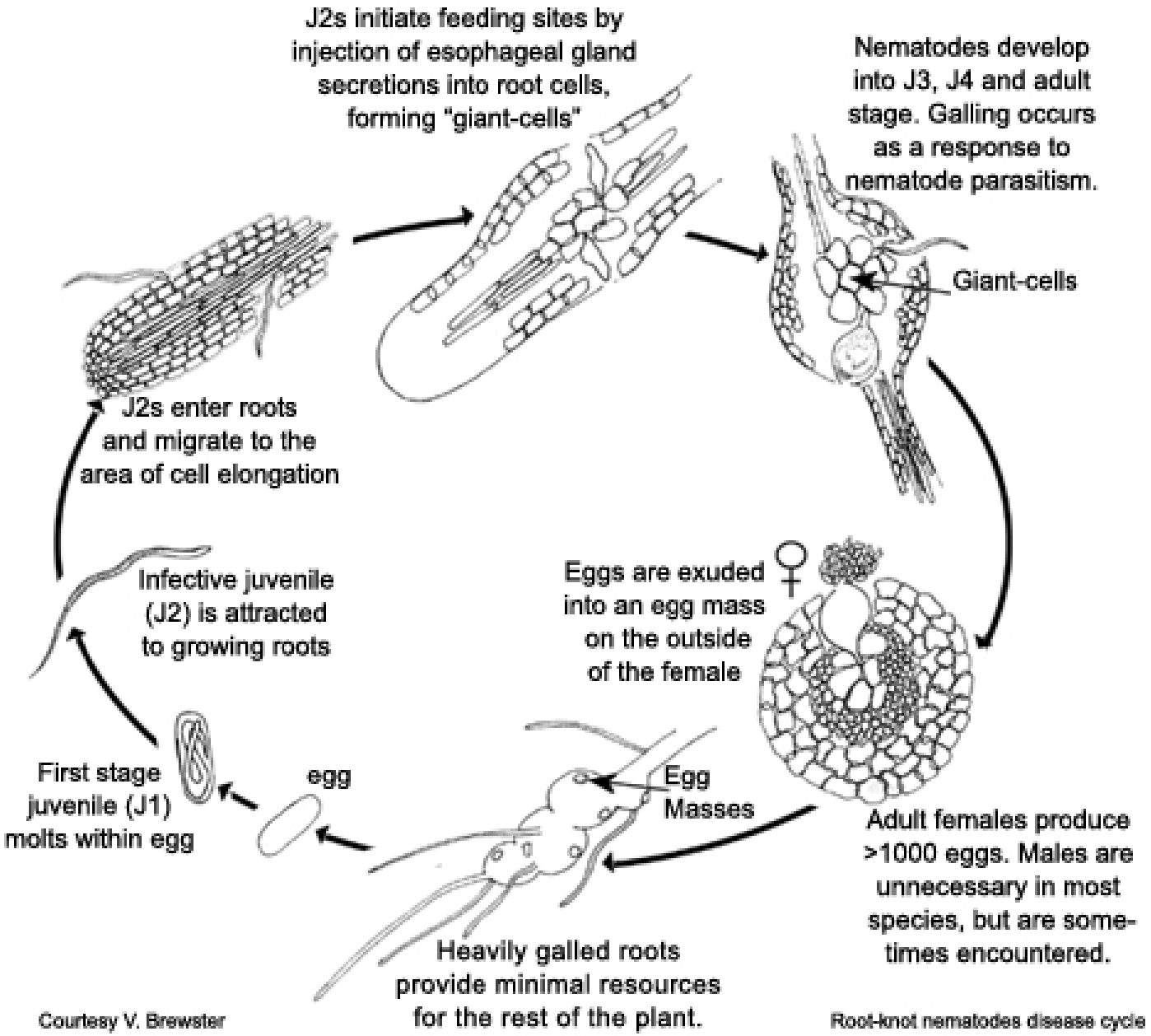
Root knot nematode and southern blight management projects in Kern County

University of California
Agriculture and Natural Resources

Symptoms

- Generally root galling
- Above-ground symptoms: stunted and less vigorous plants, wilting yellowing etc.
- Roots unable to sustain the water and nutrients needs
- Reduced yield and poor fruit quality
- Vulnerable to other soil-borne pathogens

Life Cycle: Temperature driven



Challenges in management

- Wide host range
- Mi gene resistance in tomato cultivars: Breakdown instances
- Management relied on pre-plant fumigation
- New fumigant regulations by Department of Pesticide Regulation (DPR)
    - limits the amount used by a grower
    - caps on the amounts allowed in a township
    - expanded buffer zones

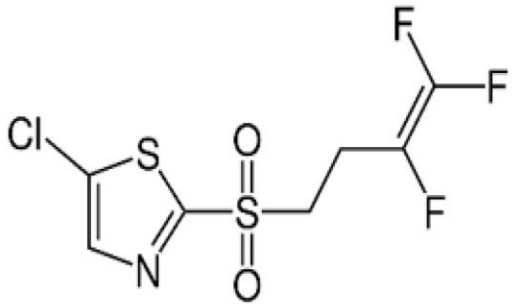
Objective

To evaluate alternative non-fumigant nematicides for managing RKN

- high efficacy
- economically viable
- environmentally safe

Product	AI	Manufacturer
Nimitz	Fluensulfone	Adama
Velum	Fluopyram	Bayer
Salibro	Fluazaindolizine	Corteva
Developmental product	----- Conventional----	Syngenta
Organic products		

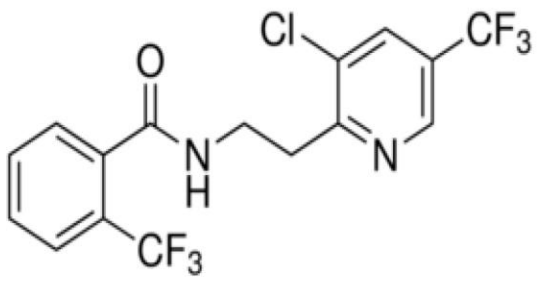
Nimitz (Adama)



Fluensulfone

Caution

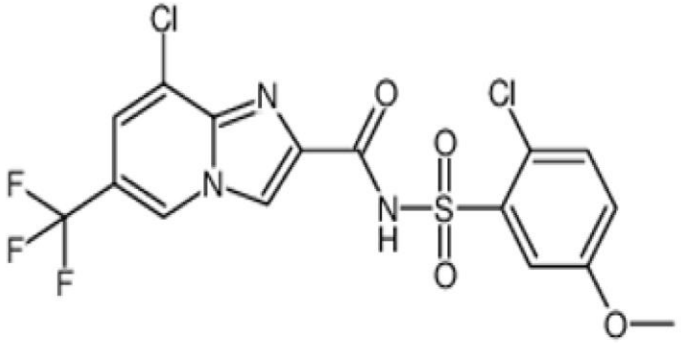
Velum(Bayer)



Fluopyram

Caution

Salibro (Corteva)



Fluazaindolizine

Caution

DP

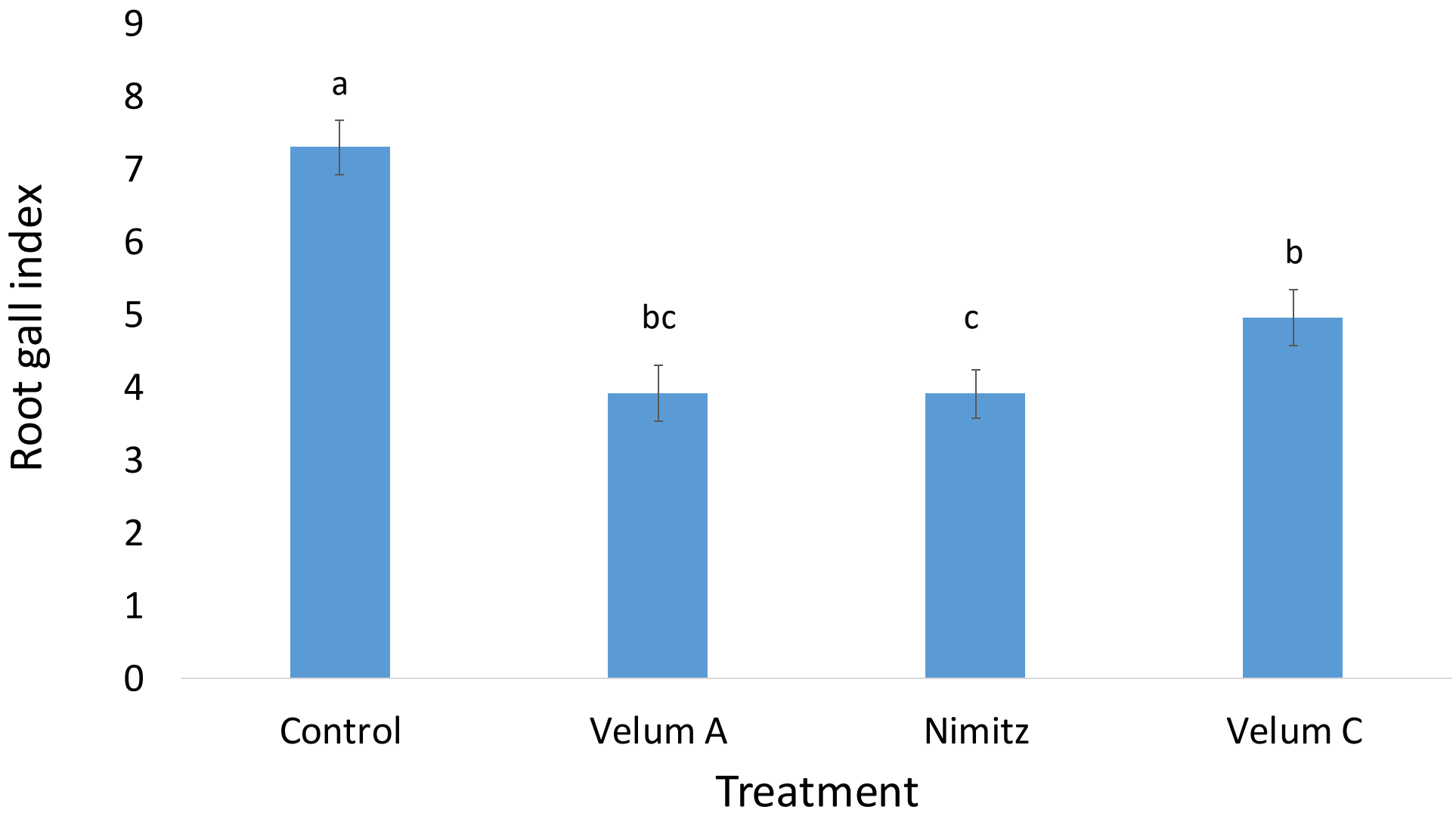
"?"

New products are less toxic, more selective, and Safer to use – true nematicides

Modes of action – New or unknown

Trials in 2019, 2021, 2024.

2019 Galling on tomato roots caused by root knot nematode



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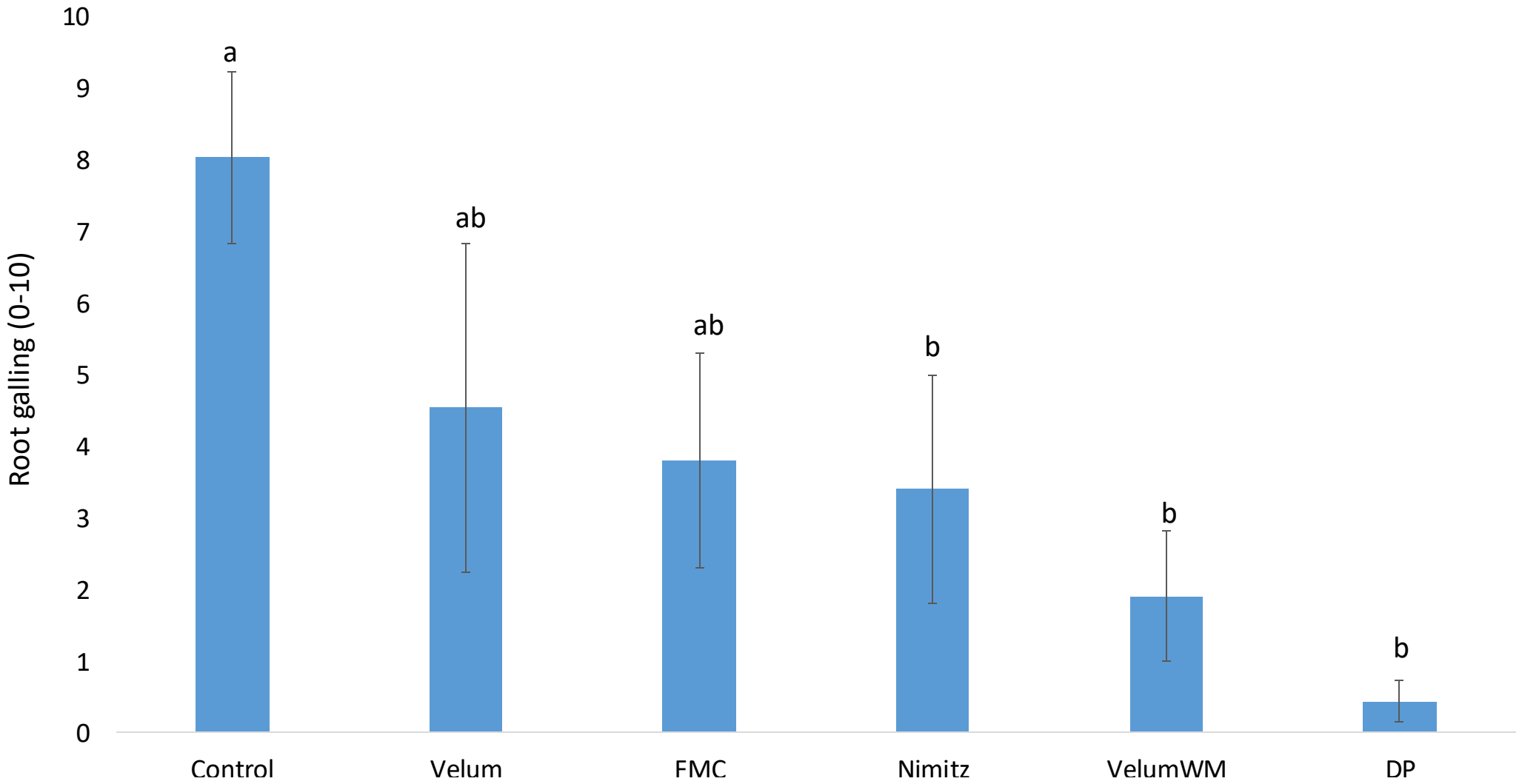
Control

Nimitz

Nimitz

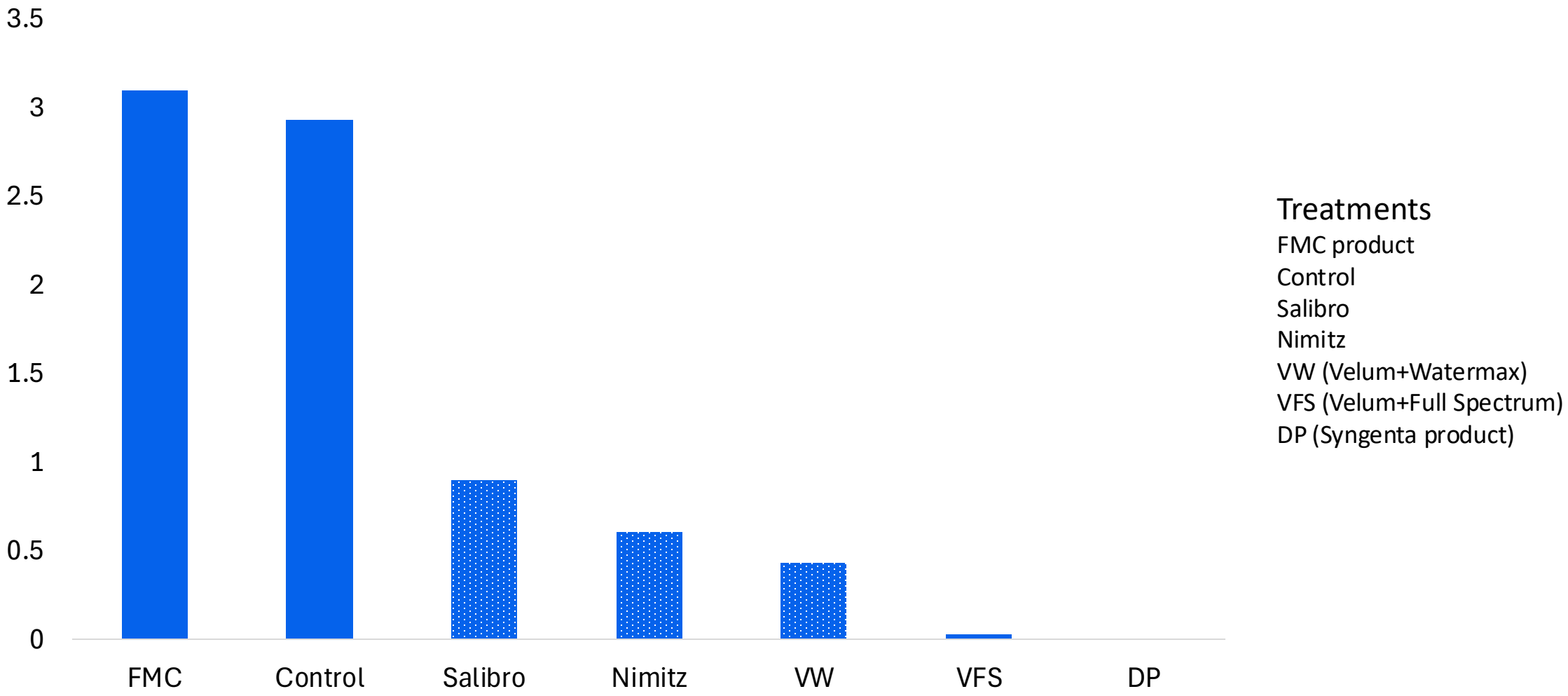
Velum C

2021 galling on tomato roots

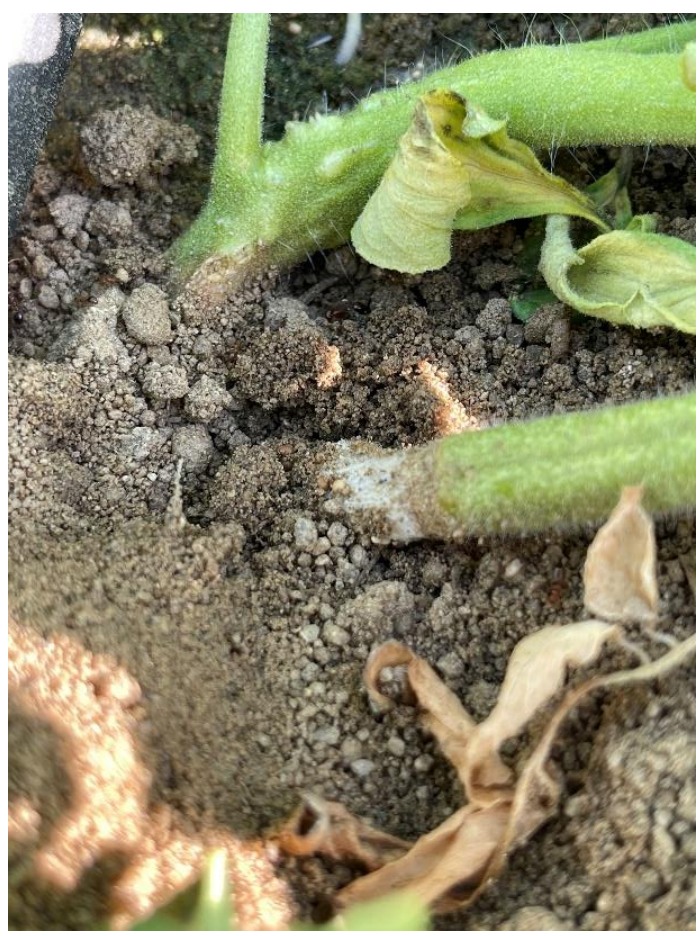


1= Control 3= Velum+WM 4= Nimitz 7= DP

2024 galling on tomato roots



Southern Blight



2021

Trt#	Treatment	Percent Incidence	Total Yield (tons/ A)
1	Control	10.48	13.56
2	Fontelis	8.42	12.63
3	Pyraziflumid	20.08	10.90
	P value	0.63	0.90

2022 Field Trial

60” wide, 30 ft plots, 5 reps

Trt#	Treatment	Percent Incidence	Marketable yield (tons/A)
1	Control	38.47	10.35
2	Fontelis	36.75	15.23
3	Pyraziflumid	34.14	11.89
	P value	0.92	0.62

2023 Field Trial Valent

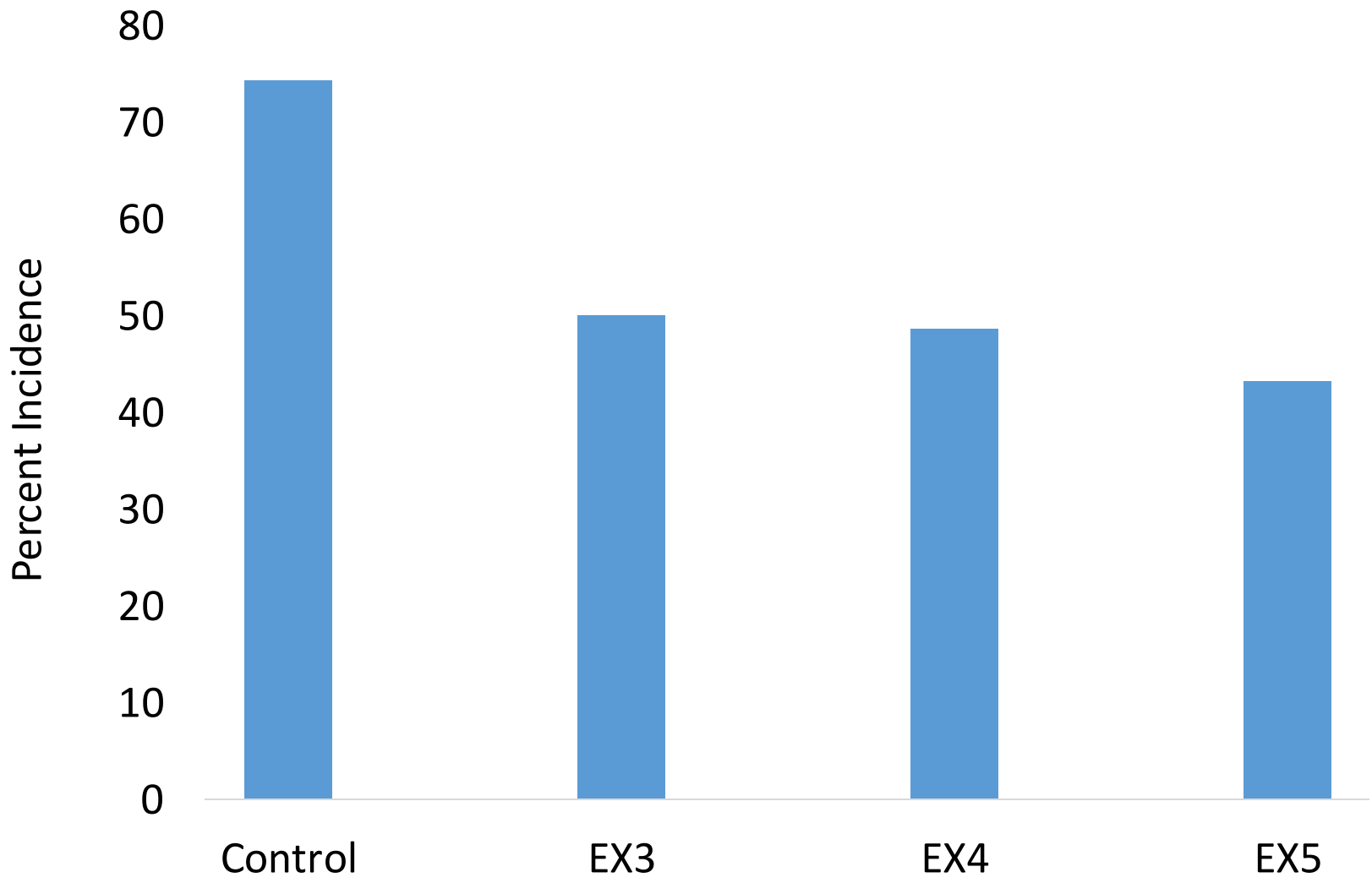
60” wide, 30 ft plots, 5 reps

	Trt	Application time/date	Rate/A
1	Control		
3	Excalia3	At planting 30 DAP	4floz/ a 2fl oz/a
4	Excalia4	At planting 45 DAP	4floz/ a 2fl oz/a
5	Excalia5	At planting 70 DAP	4floz/ a 2fl oz/a

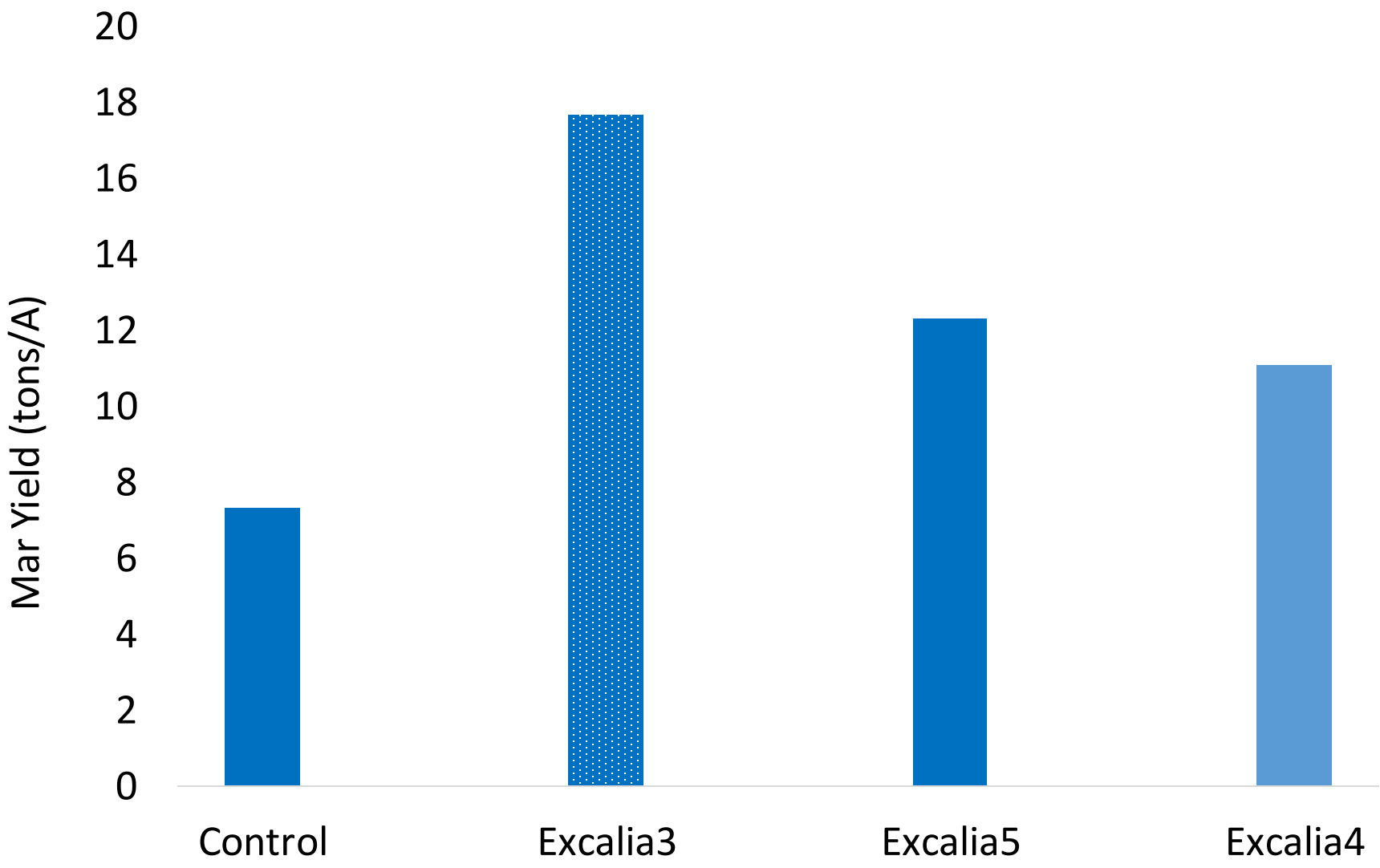
Volume at transplanting: 500G/A

Subsequent applications: 70 G/A

Excalia Trial



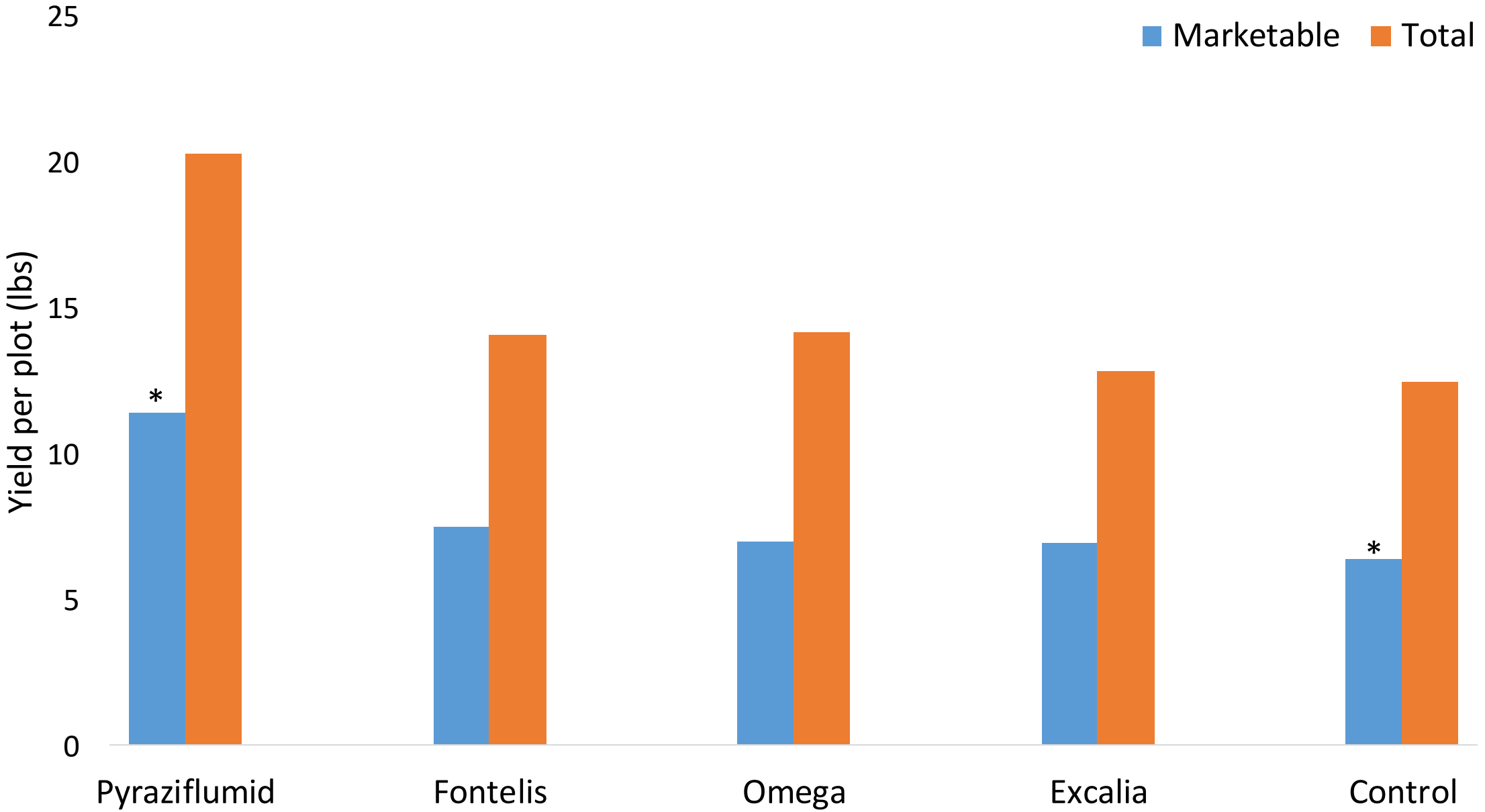
Excalia Trial



2024

Trt#	Treatment	Percent Incidence
1	Control	38.46
2	Fontelis	34.27
3	Excalia	37.82
4	Omega	37.39
5	Pyraziflumid	28.20

2024 Yield


25
20
15
10
5
0
Yield per plot (lbs)
Marketable
Total
*
*
Pyraziflumid
Fontelis
Omega
Excalia
Control

Summary

- Disease pressure varies year-year
- Lack of consistency in results
- No silver bullet

Repeating the trials with Excalia in 2025

Acknowledgements

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